

Identifying students' prior knowledge to enable Meaningful Learning

Paulo de Sá Filho

Núcleo de EaD, SENAI Goiás, Brazil

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education; Distance education.

Abstract— Success in the learning process is a complex phenomenon that is established by several causes. In view of this, students' prior knowledge takes on a relevant role in their explanation, thus, seeking means and methods that make it possible to identify this knowledge is fundamental and makes teachers equipped with this information consider the students' prior knowledge in the mediation of learning. In this way, leading their students to meaningful learning. With this, the present study presents the results obtained from the application of a questionnaire developed as an instrument to identify the pre-existing knowledge of students in Professional Distance Education courses. Thus, it is intended to contribute with teachers in the formulation of learning situations that take into account students' prior knowledge, thus resulting in a teaching-learning process that provides students with meaningful learning. For this, a descriptive and quali-quantitative case study was carried out. Which is divided into three sections: in the first, conceptualization of prior knowledge and meaningful learning is done, as well as discussing the recognition of previous knowledge; in the second, the research method used is presented; and finally, in the third section, the results obtained are presented and discussed. the research method used is presented; and finally, in the third section, the results obtained are presented and discussed.

I. INTRODUCTION

This study aims to present the results obtained in the application of a questionnaire used to identify previous knowledge of students in Professional Distance Education courses in order to promote meaningful learning. Processes like this, become valid, since contemporary teachers need to be aware of students' difficulties and that learning is no longer based on a bank education proposal, in which they believe that the teacher is the center of the teaching-learning process and that the student must receive ready-made information and fully replicate it.

Thus, the teaching-learning process becomes more effective when new knowledge is incorporated into the

student's pre-existing knowledge, as this recognition contributes to meaningful learning. Therefore, the teacher in his pedagogical practice, must observe the historical, cultural and social facts, as well as understand which methods should be used to promote this type of learning.

In order to corroborate this new reality, the objective of this article will be to discuss a proposal to identify students' previous knowledge to provide meaningful learning, structured in theoretical frameworks Ausubel [1], Freire [2], Cavaco [3], e Moreira [4]. For this, this study was organized in addition to the introduction and final considerations, in three sections, in the first one, conceptualization of previous knowledge and meaningful

learning is done, as well as discussing the recognition of previous knowledge; in the second, the research method used is presented; and finally, in the third section, the results obtained are presented and discussed.

II. PRIOR KNOWLEDGE FOR MEANINGFUL LEARNING

When we start from the following statement: "If I had to reduce all educational psychology to a single principle, I would say this: The single most important factor that influences learning is what the learner already knows. Find out what he knows and base his teachings on it" [1], the importance of prior knowledge is noted.

Thus, establishing the concept of prior knowledge and deepening its definition is fundamental for a better understanding of this study. Prior knowledge is that characterized as declarative, but it presupposes a set of other procedural, affective and contextual knowledge, which also configure the learner's previous cognitive structure [5]. In this way, it is understood that it is the combination of an individual's pre-existing attitudes, experiences and knowledge.

The definition of prior knowledge is discussed in more detail by Bransford, [6], when they stated that "children begin in the preschool years to develop sophisticated understandings (whether accurate or not) of the phenomena around them". Such initial understandings have a powerful effect on the integration of new concepts and information. However, these understandings can be accurate, providing a basis for building new knowledge, and are interpreted as prior knowledge, or they can be inaccurate, which are called misconceptions.

Thus, identifying students' prior knowledge is an essential element to assist the school team in ensuring that students have a solid foundation, promoting meaningful learning. By valuing the students' pre-existing attitudes, experiences and knowledge, one breaks with the culture of banking education, which advocates the educator as the one who always knows and while the students are always the ones who do not know [2]. With that, it opens the way for problematizing education or education for freedom [2].

In this way, it provides meaningful learning, as established by Moreira:

It is important to reiterate that meaningful learning is characterized by the interaction between previous knowledge and new knowledge, and that this interaction is non-literal and non-arbitrary. In this process, new knowledge acquires meaning for the subject and previous knowledge acquires new meanings or greater cognitive stability [4].

With this, developing resources and structuring methods to identify the knowledge that students already bring to the teaching-learning process becomes viable and extremely important, as it will provide teachers with instruments to better conduct learning, making each student be perceived in its potentialities and possible points for improvement.

III. RECOGNITION OF PRIOR KNOWLEDGE

A further point in this discussion is not only to identify previous knowledge, but that this knowledge is recognized, as explained by Inácio and Salema when stating that the recognition process aims to value the adult's experiential learning, allowing him to obtain school certification and / or professional through the validation of skills acquired throughout life. Corroborating this idea, [3] says that the learning processes are interdependent on the accumulation of experiences, making it pertinent to recognize and validate the learning that people carry out throughout their lives.

The process of recognition, validation and certification of knowledge acquired throughout life is present in education policies in several European countries [7]. Thus, these countries in their School Systems, have structured methods for the recognition, validation and certification of knowledge [3]; [7]; [8].

Given the above, the importance of recognizing the knowledge acquired throughout life is perceived, whether in the use of teachers to provide meaningful learning in the teaching-learning process or in school and / or professional certification. However, it is noteworthy that the present study is structured in an ausubelian and vigotskian conception will focus on the first possibility, that is, on the recognition of students' previous knowledge carried out by teachers to provide meaningful learning.

IV. RESEARCH METHOD

This research is a case study, as it exposes a research carried out in a specific place and reality, as [9] puts it. The case study is a research strategy that comprises a method that encompasses everything in specific collection and analysis approaches. Dice. It has a descriptive character, due to the collection, analysis and interpretation of data; exploratory, because it aims to discover the profile and previous skills of students and qualitative and quantitative nature. Its qualitative nature is justified because it aims to identify different profiles of individuals [10], and quantitative, by the use of structured data [11].

The present study was carried out in a Professional and Technological Education Teaching Institution from May

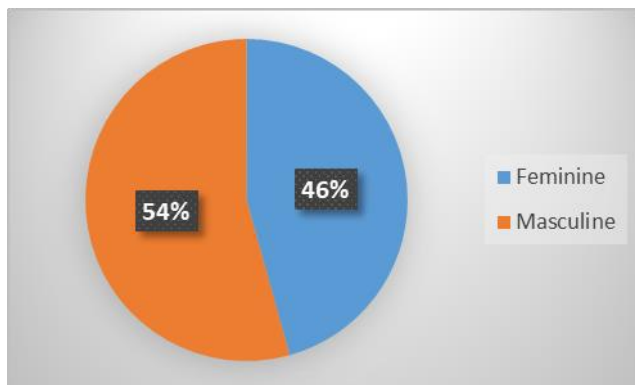
2020 to August 2020. As a data collection instrument, a questionnaire using Google forms was applied to students entering five distance technical courses, which had 28 closed and open questions. The questionnaire link was made available in the virtual learning environment - AVA, and the tutors had sent messages and made calls to students, asking them to answer the questionnaire.

V. DISCUSSION AND RESULT

The application of the questionnaire obtained 109 respondents, who are new students in distance technical courses in: Industrial Automation, Electrotechnics, Logistics, Automotive Maintenance, Computer Networks and Work Safety, in several schools throughout the state of Goiás of the researched Educational Institution. Through the responses obtained, it was possible to establish the profile of the students and whether they already had previous skills linked to the courses they were starting.

Most students are male, as shown in Graph 1. Of these 51% are not married and 59% do not have children. Regarding the age group, 48% are between 21 and 30 years old.

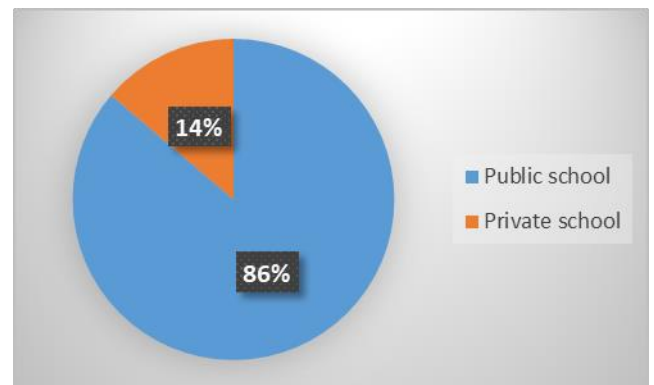
Graphic. 1: Sex



Source: authors (2020).

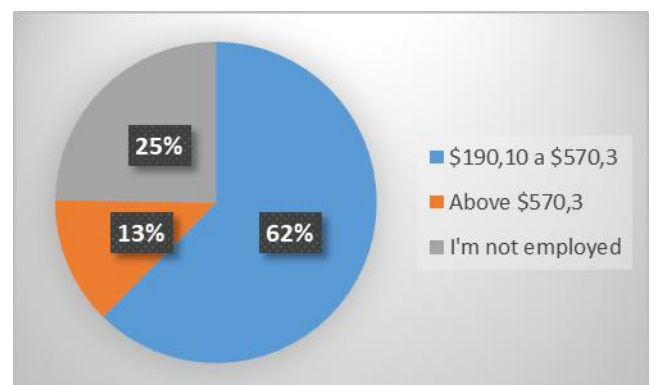
Regarding the level of education, 58% of students have completed high school, and the vast majority come from public schools, as shown in Graph 2. On the other hand, when observing the level of employability, 72% are employed. And the salary range varies from 1 to 3 minimum wages, as shown in Graph 3.

Graphic. 2: School Origin



Source: authors (2020).

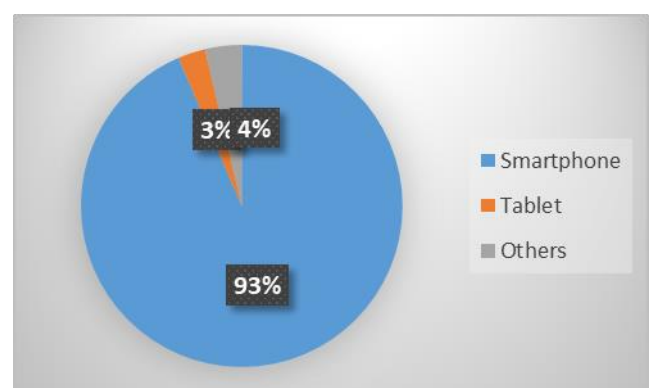
Graphic. 3: Salary range



Source: authors (2020).

When verifying computer and internet accessibility, he identified that 90% of students have a computer, 85% access the internet at home and that 93% also use their cell phones to access the internet, as shown in graph 4.

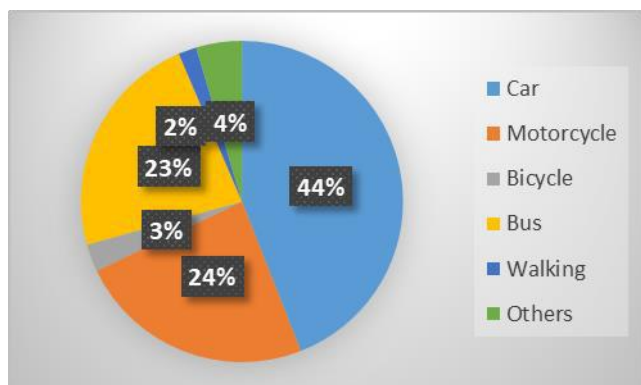
Graphic. 4: Another form of internet access



Source: authors (2020).

Another important factor observed in this study is that 62% of the students answered that the availability for study is during the night period, and that 61% have to travel up to 30km to face-to-face moments at school and use different means for that, as shown in the graph 5.

Graphic. 5: Driving to the Classroom



Source: authors (2020).

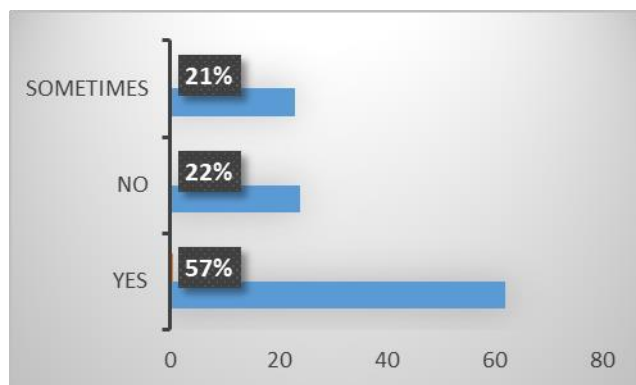
It should be noted that the results related to the profile of the students are in agreement with the profile presented of the students of technical courses and distance courses, as far as the majority are men, it is motivated by the area of the courses covered, as [12], there is a marked predominance of men, among students in the areas of hard sciences, technology, engineering and mathematics. In addition to this fact, in professional training according to [13], men had higher percentages than women.

Another common point is in relation to employability, which when observing the CensoEaD.BR - 2016/2017, of the Brazilian Association of Distance Education - Abed, shows that most students work. It is also noteworthy, regarding the forms of access, the [14], shows that among Internet users aged 10 or over, 94.6% connected via cell phone.

In order to identify whether students had previous skills linked to the technical distance courses they would take, eight questions were asked involving concepts: basic, medium and advanced. Such questions were linked to the students' daily situations, so that they could measure in a coherent way the level of experience with the approached concept. Thus, through the answers we can establish the level of prior knowledge of each student.

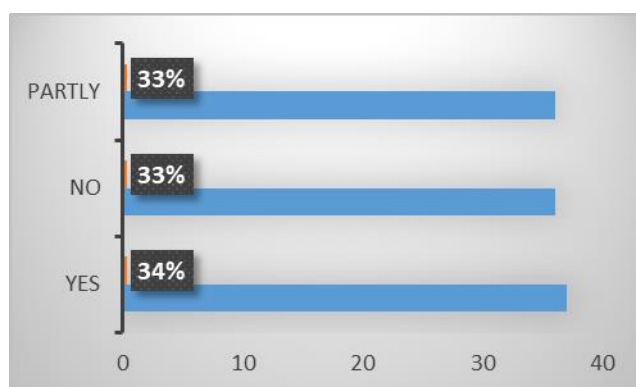
In this way, we obtained the following results, with respect to the basic concepts we demonstrate in Graph 6, referring to the average concepts we expose in Graph 7 and already with regard to advanced concepts, it is described in Graph 8.

Graphic. 6: Q. 1 and 2: Basic concepts



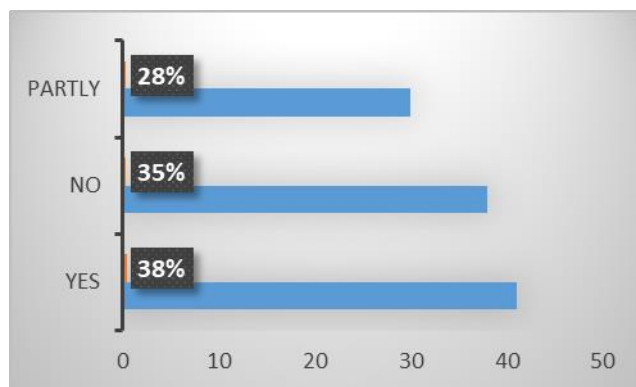
Source: authors (2020).

Graphic. 7: Q. 1 and 2: Average concepts



Source: authors (2020).

Graphic. 8: Q. 1 and 2: Advanced concepts



Source: authors (2020).

When verifying that 78% of students have basic concepts, 67% average concepts and 66% advanced concepts in the area of the course they were entering, it is clear that students have, to some extent, previous knowledge, thus strengthening the ausubelian approach and Vygotskian who advocates that teachers should take such knowledge into account in order to devise ways that provide students with meaningful learning.

VI. CONCLUSION

The result obtained in this research meets the objective that was advocated when the questionnaire was developed and applied it to the students right at the beginning of the courses, which was to identify their profile and their previous skills linked to the professional training they were entering. Because, with this information, learning situations and activities were developed according to the reality of each student, thereby stimulating everyone's learning. In this way, significant knowledge was obtained through the management of this prior knowledge.

However, it is known that the results obtained with this research are only a small step, given the great journey that we have to travel, towards a meaningful learning. Because, developing resources, methods, forms, etc., so that we can take into account the students' experience is fundamental in the teaching-learning process. Only in this way will we be successful in building education that is emancipatory for individuals, allowing them to have a critical awareness of the reality to which they are inserted.

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